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Wales 20mph Implementation Report

Independent analysis of vehicle speeds 3 months
after the implementation of 20mph speed limits in
Wales



CONTENTS

Contents.....	2
Introduction	2
Methodology.....	3
Calculating Percentage Miles Travelled	3
Results.....	4
Changes in Average Speeds	4
Percentage of Journey Length at or above set speed Values	4
Conclusion and recommendations	5
About Agilysis and TomTom Traffic Stats	6
About the Author	6

INTRODUCTION

On the 17th September 2023 the default urban speed limit in Wales changed to 20mph from the existing 30mph on ‘restricted’ roads (usually those with streetlights). On the 25th September 2023 Agilysis published a report¹ analysing the change in speeds on nearly 500km (310 miles) of roads in ten Welsh towns and cities that demonstrated a 2.9mph drop in average (median) speeds. This groundbreaking research used data from the mapping company TomTom collected from hundreds of thousands of journeys in the period immediately after the change.

Measured speeds dropped from an average of 22.7mph down to 19.8mph in the analysis period immediately after the change. Following publication of the results there has been considerable debate about the policy, implementation, and long-term benefits. It is not possible to assess observed changes in casualties, although international research analysed by the Global Road Safety Facility² suggests a 3mph drop in average speeds would result in a reduction of 32% in those killed on the roads, and a 25% reduction in those seriously injured.

Agilysis have now undertaken a second, independent analysis of vehicle speeds on the same roads as studies in the previous analysis to see what the impact has been three months after the change. Furthermore, a new methodology has been developed to estimate the number of motorists travelling at speeds that would result in a detection and potential prosecution, or speed awareness course.

¹ <https://agilysis.co.uk/2023/09/25/wales20/>

² <https://www.roadsafetyfacility.org/publications/speed-impact-tool>

METHODOLOGY

The methodology for our work has been set out in detail in the previous publication³ and will not be covered in this report. The selected roads have remained the same and the selection criteria (weekdays, 6am – 6pm) remains. The dates included in the analysis were the 11th – 15th December 2023.

The first calculation was to estimate the average speed (median) on roads in the sample area in this period and compare them to the previous analysis. The second analysis is a new methodology to assess the percentage of vehicle miles travelled at or above certain speed thresholds.

CALCULATING PERCENTAGE MILES TRAVELLED

The data from TomTom provides a detailed speed profile for each of the 7,942 individual road sections selected for analysis. These speed profiles include vehicle speeds based on 20 percentiles (vigintiles) based on all vehicles travelling along the road. For example, in Table 1 a sample speed profile is shown for a single road section. The speed in miles per hour is shown against each vigintile which means that for this road the slowest 5% of drivers were travelling up to 9.3mph, the next 5% of drivers were travelling up to 14.3mph and so on until we see the fastest 5% of drivers were travelling up to 34.8mph. It is worth noting that on this road section the 50th percentile, or median speed, was 21.7mph which is slightly higher than the post-implementation average across all road sections.

As the TomTom data is anonymised it is not possible to see the speeds of individual vehicles which poses a challenge to estimating the absolute number of motorists travelling at a specific speed. It is however possible to calculate the total length driven by motorists at or above a set speed. This can then be turned into a percentage of all journey lengths to estimate the level of speed compliance against certain thresholds across the road network.

Information on the road length, total vehicle sample size, and each individual vigintile speed was used together with a linear interpolation to estimate the number of vehicles travelling at or above a set value.

The interpolation was required to estimate the sample within the two matched vigintiles either side of the speed threshold. In the example data we can see that the vigintile representing the closest to 30mph is 85 (28.6mph) and that the 90th percentile has an average of 31.7mph. If the example road has a total sample size of 1,000 vehicles that would mean 50 vehicles per vigintile. Our interpolation results would be to assign 22.58 of the 50 drivers between these two vigintiles to the below 30mph total and the remaining 27.41 drivers to the above 30mph total. If we didn't carry out this interpolation then the lower vigintile speed would be matched, underestimating the speed values

Table 1– Sample Speed Profile

Percentile	Speed (MPH)
5	9.3
10	14.3
15	16.2
20	16.2
25	17.4
30	18.0
35	18.6
40	19.9
45	20.8
50	21.7
55	22.4
60	23.0
65	23.6
70	24.2
75	26.1
80	28.0
85	28.6
90	31.7
95	34.8

³ <https://agilysis.co.uk/download/165/white-papers-reports/7353/wales-20mph-impact-analysis-report.pdf>

RESULTS

CHANGES IN AVERAGE SPEEDS

The results of the three-month-post-change speed analysis shows that there has been a slight increase in speeds compared to the results one week after the change. Across the roads in Wales included in the analysis, speeds are now down by 2.4 miles per hour compared to before the change. This is 0.5mph higher than in the initial one-week post change period.

Table 2 – Summary of results in the post-implementation period

	Average Speed Before 20mph	Average Speed 1 Week After 20mph	Average Speed 3 Months After 20mph	Change (MPH)
Bangor	22.0	18.7	18.8	-3.2
Cardiff	22.6	19.7	20.3	-2.2
Haverfordwest	22.9	19.8	20.9	-2.0
Lampeter	23.7	20.5	21.2	-2.5
Merthyr Tydfill	22.2	20.9	20.9	-1.3
Newport	22.8	19.5	20.3	-2.5
Newtown	21.2	18.6	18.6	-2.6
Rhyl & Prestatyn	23.2	19.6	20.4	-2.8
Swansea	22.1	20.5	20.5	-1.7
Wrexham	23.2	19.6	20.4	-2.8
Wales Average	22.7	19.8	20.3	-2.4

Although the road sample sizes are smaller in individual areas (not all roads were included), it is still possible to review changes in the 10 towns and cities included in the study. The greatest reduction in average speeds was seen in Bangor (-3.2mph) and the smallest change was in Merthyr Tydfill (-1.3mph).

PERCENTAGE OF JOURNEY LENGTH AT OR ABOVE SET SPEED VALUES

As explained in the Methodology, a new technique has been developed to estimate the percentage of journey length travelled by drivers at or above a set speed. The speeds to be examined are:

- 20mph Speed limit
- 26mph Enforcement threshold for speed cameras⁴
- 30mph Previous limit
- 35mph Threshold for court summons⁵

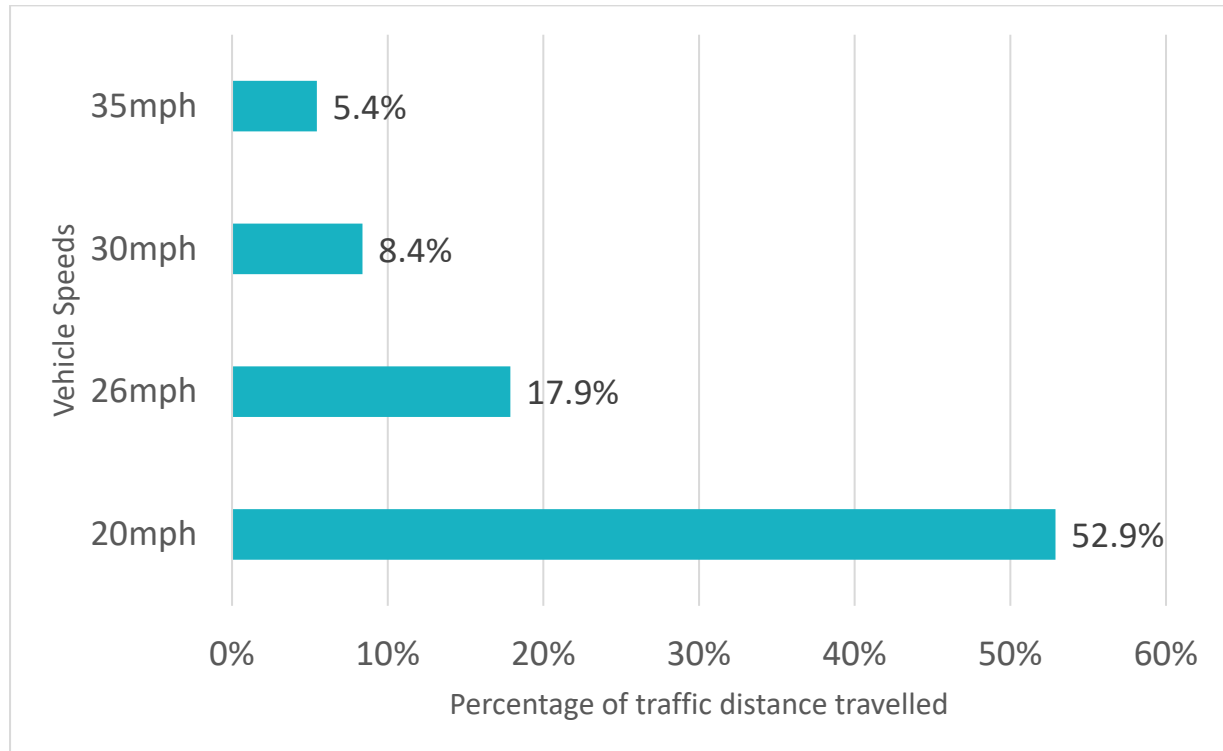
The results are shown in Figure 1 and illustrate that just over half (52.9%) of miles driven are above the speed limit. It aligns broadly with the analysis of average speeds which showed a value of 20.3mph. The next statistic shows that 17.9% of miles driven were above the enforcement threshold of 10% +4mph as set by GoSafe Wales. This does not mean that 17.9% of drivers would be expected to receive a Notice of Intended Prosecution (FPN) as drivers are known to adjust their behaviour close to enforcement locations. The next result indicates that 8.4% of miles driven are at or above the old 30mph speed limit. Finally, we can see that 5.4% of miles driven are at a speed that, if detected by

⁴ <https://www.gosafe.org/campaigns-and-operations/20mph/>

⁵ <https://www.racfoundation.org/motoring-faqs/enforcement>

enforcement, may result in a court summons where a Magistrate would take into consideration a number of factors before deciding upon an appropriate punishment which is likely to exceed the typical 3 points and £100 fine associated with lower levels of speeding.

Figure 1 – Percentage of Vehicle Distance at or Above Specific Speeds



CONCLUSION AND RECOMMENDATIONS

Little has changed following the initial analysis. The change in traffic speeds on urban roads in Wales has been dramatic following the implementation of widespread 20mph limits although speeds have increased very slightly over the first three months.

Compliance is broadly good with speeds close to the limit, although there are still many journeys by drivers that involve high speeds along the route. The introduction of enforcement in January 2024 is an important next-step in achieving greater compliance across the road network and further analysis and research, especially at target locations, would help to understand the benefit this brings to achieving lower speeds.

The power and availability of new data sources affords opportunities for local authorities and police forces to have a greater understanding of vehicle speeds across road network, either post-implementation of speed limit change or before new limits are put in place. This is critical in addressing specific issues at certain high-risk locations.

ABOUT AGILYSIS AND TOMTOM TRAFFIC STATS

Agilysis are a specialist consultancy helping road authorities, governments, charities, and other stakeholders in a variety of ways. We provide advice on strategy, conduct independent research, and deliver power data solutions in the UK and around the world.

We have partnered with TomTom to access connected vehicle data for this project, and we already supply this data for analysis on congestion management and road safety projects. Our expertise in analysing connected vehicle data is significant, delivering solutions to several dozen GB road safety organisations, private companies, and research organisations. We are grateful to TomTom for allowing free use of their Traffic Stats solution to carry out this research without charge.

To find out more about Agilysis and our solutions please visit www.agilysis.co.uk and for more information on our Traffic Insights solution go to <https://agilysis.co.uk/trafficinsights/>.



ABOUT THE AUTHOR

Richard Owen is our CEO and has 20 years of experience in analysing road safety data. He has led our partnership with TomTom and worked with our team of talented analysts and data scientists to understand the potential for this type of research.

He is a significant figure in road safety both in the UK and overseas, with experience of delivering award-winning projects covering multiple disciplines.



His experience as a manager of a multi-partner enforcement organisation led to a deep understanding of matters relating to enforcement technology, deployment and management of resources and partner relationships. His historic work in geospatial and database systems has brought insight into effective analysis techniques and system design which has been used extensively in our work for clients.

Richard regularly provides policy and strategy advice to organisational leaders and has appeared at conferences and events across the globe.

Assistance in this report has been provided by Agilysis' Data Scientist, Craig Smith who developed the method for interpolating speeds and traffic percentages at or above set speed values.



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